

# CS 150 Lab 5

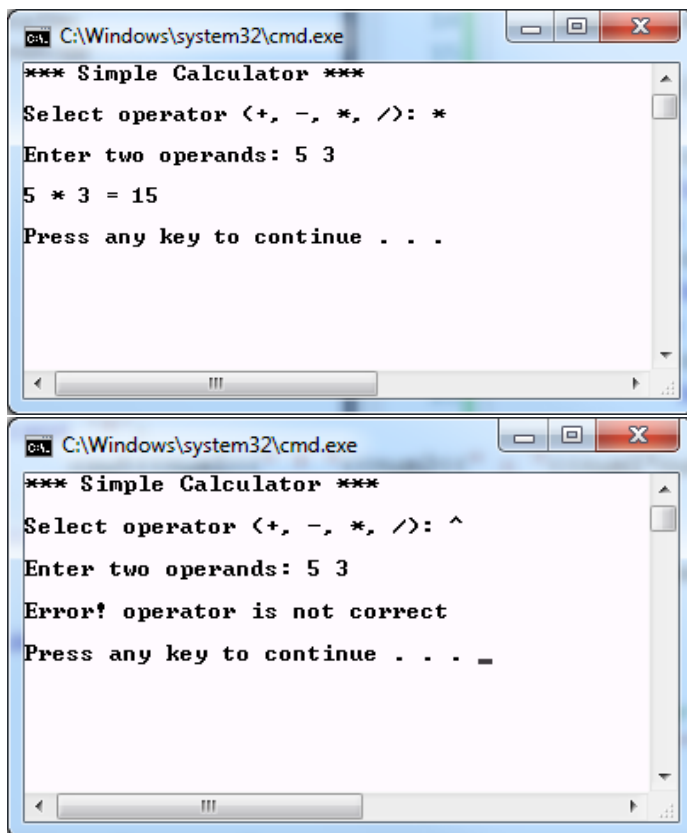
## Complex Conditional Logic

The main objective of today's lab is to solve a problem that uses complex conditional logic including relational operators, logical operators, modulus, single-alternative ifs, double-alternative ifs, and multiple-alternative ifs. You are to continue using the Visual Studio debugger to help identify any logical errors that your program contains.

1. Be sure your output looks exactly like the specified output.
2. Submit your solutions folder with the completed project to **CS150-02 Drop** folder when you are done.
3. Use the program skeleton and add comments to your code.
4. Write small pieces of code and test as you go!!!!!!!!!!

### Lab 5.1

Write a complete C++ program in a project called **05\_1\_Calculator** that implements a simple calculator. The operators are +, -, \*, and /. Any other operator is invalid. Here is how your program is to work:



```
C:\Windows\system32\cmd.exe
*** Simple Calculator ***
Select operator (<+, -, *, />): *
Enter two operands: 5 3
5 * 3 = 15
Press any key to continue . . .

C:\Windows\system32\cmd.exe
*** Simple Calculator ***
Select operator (<+, -, *, />): ^
Enter two operands: 5 3
Error! operator is not correct
Press any key to continue . . .
```

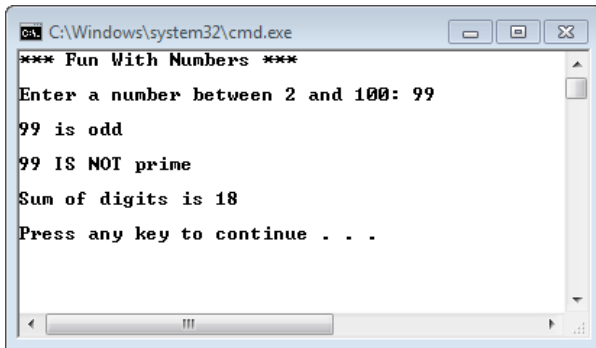
**► STOP – Show the instructor or TA**

## Lab 5.2

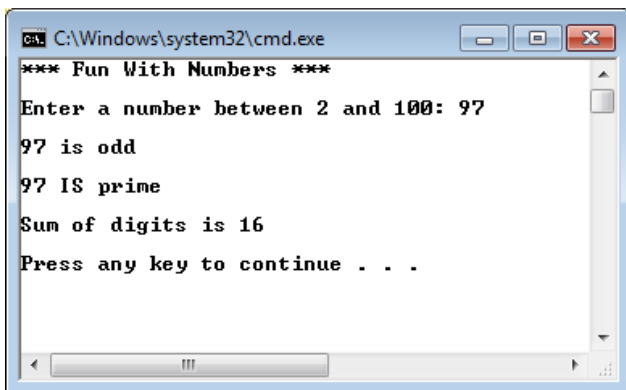
Add a project called **05\_2\_FunWithNumbers** to your **PUNetIDLabs** solution that solves the following problem.

Write a complete C++ program that allows the user the ability to enter a number in the range of some lower bound (minimum 2) to some upper bound (maximum 100). These are integers and are initially set to 2 and 100. You are then to ask the user to enter a value and print out whether the value entered is even or odd, prime or not, and finally the sum of the digits.

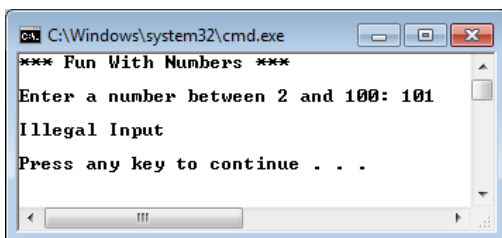
Here is how your program is to work:



```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 100: 99
99 is odd
99 IS NOT prime
Sum of digits is 18
Press any key to continue . . .
```



```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 100: 97
97 is odd
97 IS prime
Sum of digits is 16
Press any key to continue . . .
```



```
C:\Windows\system32\cmd.exe
*** Fun With Numbers ***
Enter a number between 2 and 100: 101
Illegal Input
Press any key to continue . . .
```

1. Your programs are to compile without any errors or warnings.
2. When determining the prime numbers less than 101, you will need to handle 2, 3, 5, and 7 as special cases. In other words, you know that those numbers are prime. However, you cannot store (know) every prime number. So, you need to come up with a way of determining whether numbers other than 2, 3, 5, and 7 are prime. Use the site <http://www4.ncsu.edu/~ahjones3/courses/PrimeFactorization.pdf> to help you.
3. Show the instructor or TA after each step: 1) even/odd, 2) prime/not prime, 3) sum of digits.

Once your projects are complete, place your solution PUNetIDLabs into the **CS150-02 Drop** folder on grace. Your solution is to have all previous projects completely working and correct.